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ABSTRACT

In this report of the final evaluation of the Las Cruces (New Mexico) Sustained Primary Program for Bilingual Students (funded under Title III of the Elementary and Secondary Education Act), the major findings for the academic years of 1967-8, 68-9, and 69-70 are cited following a program description in terms of schools, students, teachers, class size, classrooms and treatments, and objectives for each year. As reported, K-3 bilingual children in 4 public elementary schools that tended to be homogeneous with regard to the children's cultural and socioeconomic backgrounds were placed in 1 of 3 instructional settings: (1) an experimental English program where only English was used as an instructional language, (2) an experimental Spanish/English program where both languages were used, and (3) a control program. The report discusses the program's effectiveness in terms of such factors as Spanish vs. English instruction, children's intellectual development and self-concept, parental involvement, and the children's bicultural interaction. Although "results of the K-3 experiment still are...inconclusive," it is indicated that the program is providing"...a very valuable set of learning experiences in both the cognitive and affective domains." Also included in the report is a post-program evaluation, completed in the fall of 1970, to examine the effectiveness of the summer session experience as measured by the Metropolitan Achievement Test; 10 tables summarize the significant differences and the analyses proper, which indicate that the summer sessions appear to have a beneficial effect on achievement. (NQ)

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A Cumulative Summary of the Three Years of the Sustained Primary Program for Bilingual Students 1967-1970

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INTRODUCTION

This is the final evaluation of the Sustained Primary Program for Bilingual Students. It summarizes the major findings of the annual evaluations for the academic years 67-68, 68-69, 69-70 and presents a fall 70-71 post-program evaluation of academic achievement.

The purpose of the "bilingual program" is to "increase the achievement levels of Spanish-speaking students through a sustained kindergarten through third grade language arts program, dual language instruction and parent involvement." (K-3 Progress Report, p. 12)

This study examines the academic and intellectual achievement of children in three instructional settings, an Experimental English (E) program, an Experimental Spanish/English (SE) program, and the Control program (C). These programs are more fully described in the Title VII Evaluation Report, 1970.

The major difference between the Experimental English and the Experimental Spanish/English programs is that only English is utilized as an instructional language in the Experimental English program and both English and Spanish are utilized in the Experimental Spanish/English program.

POPULATION

Schools. Students in the research sample were located in four Las Cruces Public Elementary Schools; Bradley, Lucero, Mesilla, and Washington.

Table 1 compares the four schools with regard to the incidence of children from low income families and various cultural backgrounds. Inspection reveals these schools tend to be rather homogeneous with regard to these variables. The school showing the greatest deviation from homogeneity is Washington.

Students. The research population appeared to be representative of the population within the research school but was not representative of the entire school district population. Probably in future groups more non-Spanish-speaking children should be incorporated into the Experimental Spanish/English program. However, since the program is voluntary and the number of non-Spanish-speaking children in the research schools is very small, it may be difficult to find a sufficient number of parents willing to place their children in the Spanish/English part of the program.

It must be acknowledged, however, that there has been a large number of parents contacting public school personnel to request that their children be placed in the program. Unfortunately it has not been possible to accommodate these requests nor has it been possible to record the cultural backgrounds of these people.

Teachers. Teachers in the various groups were quite different with regard to cultural, language and experimental backgrounds. The Experimental group teachers tend to be bilingual, (English and Spanish), have a Spanish-American or Mexican-American cultural heritage, and be less experienced in teaching. The Control group teachers tend to be monolingual,

Table 1

Description of Student Population
at the Four Project Schools

School	Low Income	Spanish Surname	Non-Spanish Surname
Bradley	40.9%	99%	00%
Lucero	49.8%	97%	3%
Mesilla	41.0%	97%	3%
Washington	39.9%	79%	21%

have a "main stream" cultural heritage, and be more experienced in teaching.

In order to make a more precise evaluation of the effectiveness of the program, this variable should be controlled. Specifically, Control teachers should be selected to match the experimental group teachers to relevant experience and training variables. The Control group teachers are selected by the principals with the consent of the teacher. One problem in securing Control group teachers, however, has been the reluctance of these teachers to relinquish the classroom time required for testing. As the number of variables measured increases, the magnitude of this problem will increase. Much thought and effort is currently being devoted to ways in which the amount of testing time required of the teacher and students can be reduced to a minimum.

Class size. Generally class size was approximately equal for the three groups with about 25 students per classroom.

Classrooms and Treatments. Classrooms assigned to the Experimental English Treatment were located in Bradley and Washington schools; those assigned to the Experimental Spanish/English program were located in Mesilla and Lucero schools. The Control classrooms were located in all four schools.

OBJECTIVES

The stated objectives of the bilingual project have been expanded as the program progressed.

First Year's Objectives

I. To increase the achievement level of Spanish-speaking pupils through the use of a sustained K-3 program.

II. To determine whether Spanish-speaking pupils achieve at a higher level in a program that utilizes instruction in both Spanish and English or in a program utilizing English only.

III. To involve the parents of the Spanish-speaking students in the educational program as advisors and learners thus enriching the home environment of the child.

IV. To determine whether a 12-month school year (200 school days) with short vacation periods spread evenly throughout the year will serve the learner better than the 180 day regular term with its three month vacation.

Second Year's Objectives

I. To increase the achievement level of Spanish-speaking pupils through the use of a sustained K-3 program.

II. To determine whether Spanish-speaking pupils achieve at a higher level in a program that utilizes instruction in both Spanish and English, or in a program utilizing English only.

III. To involve the parents of the Spanish-speaking students in the educational program as advisors and learners, thus enriching the home environment of the child.

IV. To determine whether a twelve month school year (200 school days) will serve the learner better than the regular school year (180 school days).

V. To increase the measurable mental abilities of children who have Spanish cultural/linguistic backgrounds.

VI. To help children develop positive feelings of self-worth.

VII. To help children develop skills for bilingual-bicultural interaction.

VIII. To construct a school curriculum that utilizes the culture and language of Spanish background pupils.

Third Year's Objectives

Instructional Outcomes - Cognitive Domain:

I. To increase educational achievement of Spanish-speaking children who have low functional levels in the English language.

II. To increase the measurable mental abilities of children who have Spanish cultural/linguistic backgrounds.

Instructional Outcomes - Affective Domain:

III. To help children develop positive feelings of self-worth.

IV. To help children develop the desire and the skills for meaningful bicultural interaction.

Instructional Outcomes - Parent/School Relationships:

V. To improve home/school relationships so that parents may become more directly involved in the establishment of educational goals for themselves and their children.

Methodological Features:

VI. To construct a school curriculum which utilizes the culture and the language of Spanish-speaking pupils.

VII. To provide differentiated learning activities in order that children may experience success in both the cognitive and affective domains.

VIII. To provide continuous educational learning experience so that no time is lost in review or re-teaching via a summer program.

Inspection of the objectives indicates that they grew to include learning in the affective domain and the development of methodological features.

RESULTS

Academic Achievement

Academic achievement was evaluated primarily by means of the Metropolitan Achievement Test. This is an English language instrument which in no way measures fluency in the Spanish language. In fact, those students being instructed to a significant degree in Spanish may be handicapped in their ability to perform on this test since a considerable portion of classroom time is being spent in Spanish language instruction and thus English language usage is not as extensively covered as it is in the traditional classroom.

Also, if the student is exposed to a curriculum with a high cultural and self awareness content, he may not initially perform as well in the academic areas as the student who is exposed to the traditional curriculum.

The assumption of the Las Cruces Public Schools Bilingual Project is that a program emphasizing cultural and self-awareness along with developing the basic language ability of the child may initially slow the child's acquisition of the academic skills. However, by emphasizing

these factors it is felt that the child will develop a more positive self image and a stronger foundation in communication skills. Once these skills are acquired, the student can then excel in the academic subject areas.

Thus, at the first and second grade level, one should expect the experimental group students to perform less well than the Control students in the general academic areas. However, in the intermediate grades, third and fourth, the experimental group students should begin to catch up and surpass the Control students. Finally, if the project is successful, the experimental groups' performances in the traditional academic areas should surpass the Control groups in the last two elementary grades.

Because of this it is difficult to make clear-cut statements regarding the long-term effectiveness of the bilingual program until students complete the sixth grade. In fact, it could be argued that complete program evaluation requires that students be followed through their entire academic careers.

Program Effectiveness

The results seem to conform to the expectation that Control group students would show greater achievement in the first two grades and at the third grade level differences between groups would disappear.

Summer Program. The summer sessions appear to have a beneficial effect on achievement.

Spanish Versus English Instruction. The results with regard to Experimental English versus Experimental Spanish/English programs, however,

are not clear and a meaningful interpretation of the data is difficult. However, it appears that dual language instruction in Spanish and English usage does not permanently retard academic growth. The Spanish/English students acquired both Spanish language and English language skills and at the end of the third grade did not show a deficit in the other academic skills.

Intellectual Development

Intellectual development was evaluated by means of the California Test of Mental Maturity - Short Form. There were no consistent differences in performance on this test between the various groups. Thus, it would appear that the experimental program did not have a measurable differential effect on the intellectual development of students.

Parental Involvement and Attitude Toward Education

The data suggest that parents of children in the experimental programs tend to have a more positive attitude toward education and the program than do Control group parents. Also, experimental group parents seem to make more contacts with the school.

Self-Concept

There is no data regarding the relative self-concepts of the children in the bilingual project which can be meaningfully interpreted. However, work has begun on the development of a procedure for evaluating this dimension of student functioning.

Bicultural Interaction

What applies to self-concept also applies to bicultural interaction.

Methodological Features

While there is no "hard data" regarding objectives VI, VII, and VIII of the third year's evaluation, it is the impression of this and earlier evaluators, the auditors and a number of on site visitors that the program is meeting these objectives.

CONCLUSION

The results of the K-3 experiment are still at this point inconclusive. However, formal evaluation, auditors' reports and informal reports of classroom visitors indicate that the program is providing Spanish-speaking children in the Las Cruces area with a very valuable set of learning experiences in both the cognitive and affective domains.

By the end of the third grade year all groups are essentially equal in achievement. In addition, the Experimental Spanish/English group has developed Spanish language skills that have not yet been measured. It is significant that children learning in two languages achieve equally as well as children taught in one language. Further, time spent with Spanish language instruction does not appear to cause the Experimental Spanish-English group to permanently fall behind the Control or Experimental English groups.

Evaluation of such a program is a complex, long term task and instrumentation to accomplish much of it is not commercially available. Thus, the evaluation depends upon the development of a set of appropriate tests. This is well underway in the Las Cruces Project.

APPENDIX

Post Program
Evaluation

A final partial evaluation of the K-3 program was performed in the fall of 1970. Academic achievement of children entering the third and fourth grades was examined via the Metropolitan Academic Achievement of children entering the third and fourth grades was examined via the Metropolitan Achievement Test. The primary purpose of this evaluation was to examine the effectiveness of the summer session experience. The results of this analysis are consistent with those of earlier evaluations. A summary of significant differences is presented in Table 2. The analyses proper are summarized in Tables 3 through 10.

TABLE 2

SUMMARY OF MEAN DIFFERENCES* ON THE

METROPOLITAN ACHIEVEMENT TEST

TEST SEPTEMBER 70-71

Scale	Grade 3	Grade 4
Word Knowledge	EE = C > ESE	ESE = EE = C
Word Discrimination	EE = ESE = C	ESE = EE = C
Reading	EE = C, C = ESE, EE > ESE	EE = ESE = C
Arithmetic	EE > C > ESE	EE =ESE = C

EE - Experimental English

ESE - Experimental Spanish/English

C - Control (traditional Classroom)

*As revealed by Newman-Keuls Analysis

TABLE 3

TEST 15
ANALYSIS OF PERFORMANCE
FOR 2nd in 69
ON MAT
Word Knowledge
Administered Fall 70

MEANS, STANDARD DEVIATIONS AND NUMBERS OF SUBJECTS

Treatment Groups

		Experimental EE	Experimental Spanish/English	Control
Boys	M	44.60	38.26	42.90
	SD	8.44	7.80	7.20
	N	20	23	30
Girls	M	46.38	42.60	45.48
	SD	7.04	7.05	6.58
	N	29	20	31
Combined	M	45.65	40.28	44.21
	N	49	43	61

ANALYSIS OF VARIANCE SUMMARY

Source of Variance	Sum of Squares	Degrees of Freedom	Means Squares	F-Ratio
A - Sex	311.31	1	311.31	5.61*
B - Treatment	680.74	2	340.37	6.14*
S x T	41.76	2	20.88	0.38
Error	8155.31	147	55.48	

SUMMARY

The Experimental English group and the Control group were superior to the Experimental Spanish/English group. There was no significant difference between the Control group and the Experimental English group.

TABLE 4
TEST 15
ANALYSIS OF PERFORMANCE
FOR 2nd in 69
ON MAT
Word Discrimination
Administered Fall 70

MEANS, STANDARD DEVIATIONS AND NUMBERS OF SUBJECTS

Treatment Groups

		Experimental EE	Experimental Spanish/English	Control
Boys	M	47.10	45.35	44.37
	SD	9.81	8.88	9.70
	N	20	23	30
Girls	M	50.97	49.25	49.06
	SD	7.93	5.77	7.82
	N	29	20	31
Combined	M	49.39	47.16	46.75
	N	49	43	61

ANALYSIS OF VARIANCE SUMMARY

Source of Variance	Sum of Squares	Degrees of Freedom	Mean Squares	F-Ratio
A - Sex	638.21	1	638.21	8.57*
B - Treatment	143.39	2	71.69	0.96
S x T	5.10	2	2.55	0.03
Error	10944.61	147	74.45	

SUMMARY

There were no significant differences between treatment groups. The girls performed significantly better than the boys.

TABLE 5
TEST 15
ANALYSIS OF PERFORMANCE
FOR 2 nd in 69
ON MAT
Reading
Administered Fall 70

MEANS, STANDARD DEVIATIONS AND NUMBERS OF SUBJECTS

Treatment Groups

		Experimental EE	Experimental Spanish/English	Control
Boys	M	43.80	38.26	40.67
	SD	8.76	8.93	8.99
	N	20	23	30
Girls	M	48.55	41.80	45.23
	SD	7.88	8.41	6.94
	N	29	20	31
Combined	M	46.61	39.91	42.99
	N	49	43	61

ANALYSIS OF VARIANCE SUMMARY

Source of Variance	Sum of Squares	Degrees of Freedom	Mean Squares	F-Ratio
A - Sex	678.15	1	678.15	9.49*
B - Treatment	931.33	2	465.67	6.52*
S x T	10.10	2	5.05	0.07
Error	10500.12	147	71.43	

SUMMARY

The Experimental English group was superior to the Experimental Spanish/English group. The girls performed significantly better than the boys.

TABLE 6
TEST #15
ANALYSIS OF PERFORMANCE
FOR 2nd in '69
ON MAT
Arithmetic Concepts & Skills
Administered Fall 70

MEANS, STANDARD DEVIATIONS AND NUMBERS OF SUBJECTS

Treatment Groups

		Experimental EE	Experimental Spanish/English	Control
Boys	M	48.25	39.96	41.50
	SD	7.94	8.49	6.60
	N	20	23	30
Girls	M	47.28	39.85	41.55
	SD	8.46	8.06	7.67
	N	29	20	31
Combined	M	47.68	39.91	41.53
	N	49	43	61

ANALYSIS OF VARIANCE SUMMARY

Source of Variance	Sum of Squares	Degrees of Freedom	Mean Squares	F-Ratio
A - Sex	4.72	1	4.72	0.07
B - Treatment	1697.24	2	848.62	13.24*
S x T	7.03	2	3.51	0.06
Error	9420.23	147	64.08	

SUMMARY

The Experimental English group was superior to both the Experimental Spanish/English group and the Control group.

TABLE 7
TEST #15
ANALYSIS OF PERFORMANCE
FOR 3rd in 69 - 70
ON MAT
Word Knowledge
Administered Fall 70

MEANS, STANDARD DEVIATIONS AND NUMBERS OF SUBJECTS

Treatment Groups

		Experimental EE	Experimental Spanish/English	Control
Boys	M	43.25	43.06	45.12
	SD	11.84	7.79	7.48
	N	8	18	26
Girls	M	44.53	46.23	41.74
	SD	5.38	8.82	6.08
	N	15	22	23
Combined	M	44.08	44.80	43.53
	N	23	40	49

ANALYSIS OF VARIANCE SUMMARY

Source of Variance	Sum of Squares	Degrees of Freedom	Mean Squares	F-Ratio
A - Sex	3.50	1	3.50	0.06
B - Treatment	24.40	1	12.20	0.19
S x T	181.50	1	90.7490	1.44
Error	6663.14	106	62.86	

SUMMARY

There were no significant differences.

TABLE 8
TEST #15
ANALYSIS OF PERFORMANCE
FOR 3 rd in 69-70
ON MAT
Word Discrimination
Administered Fall 70

MEANS, STANDARD DEVIATIONS AND NUMBERS OF SUBJECTS

Treatment Groups

		Experimental EE	Experimental Spanish/English	Control
Boys	M	48.75	43.23	46.08
	SD	7.07	5.83	7.51
	N	8	18	26
Girls	M	44.87	48.68	45.04
	SD	5.73	5.70	6.98
	N	15	22	23
Combined	M	46.22	46.25	45.59
	N	23	40	49

ANALYSIS OF VARIANCE SUMMARY

Source of Variance	Sum of Squares	Degrees of Freedom	Mean Squares	F-Ratio
A - Sex	0.81	1	0.81	0.02
B - Treatment	26.03	2	13.01	0.29
S x T	362.37	2	181.19	3.99*
Error	4804.43	106	45.33	

$p < .05$

SUMMARY

There is a significant interaction between Sex and Treatment.

TABLE 9
TEST #15
ANALYSIS OF PERFORMANCE
FOR 3 rd in 69 - 70
ON MAT
Reading
Administered Fall 70

MEANS, STANDARD DEVIATIONS AND NUMBERS OF SUBJECTS

Treatment Groups

		Experimental EE	Experimental Spanish/English	Control
Boys	M	46.13	42.22	44.54
	SD	7.72	5.82	6.47
	N	8	18	26
Girls	M	44.53	46.23	42.52
	SD	5.34	7.22	5.66
	N	15	22	23
Combined	M	45.09	44.43	43.59
	N	23	40	49

ANALYSIS OF VARIANCE SUMMARY

Source of Variance	Sum of Squares	Degrees of Freedom	Mean Squares	F- Ratio
A - Sex	0.44	1	0.44	0.01
B - Treatment	52.74	2	26.37	0.62
S x T	180.7473	2	90.37	2.14
Error	4485.80	106	42.32	

SUMMARY

There were no significant differences.

TABLE 10
TEST #15
ANALYSIS OF PERFORMANCE
FOR 3rd in 69 -70
ON MAT
Arithmetic Concepts & Skills
Administered Fall 70

MEANS, STANDARD DEVIATIONS AND NUMBERS OF SUBJECTS

Treatment Groups

		Experimental EE	Experimental Spanish/English	Control
Boys	M	45.00	44.06	42.54
	SD	9.06	8.38	7.77
	N	8	18	26
Girls	M	44.33	46.45	42.22
	SD	8.13	7.66	8.34
	N	15	22	23
Combined	M	44.56	45.37	42.39
	N	23	40	49

ANALYSIS OF VARIANCE SUMMARY

Source of Variance	Sum of Squares	Degrees of Freedom	Mean Squares	F-Ratio
A - Sex	5.4431	1	5.4431	0.0783
B - Treatment	148.1514	2	74.0757	1.0660
S x T	44.9835	2	22.4917	0.3237
Error	7366.1172	106	69.4917	

SUMMARY

There were no significant differences.